

IN THE CLAIMS:

Kindly amend claims 1-16 and add new claim 17 as follows:

1. (Presently Amended) A reforming method comprising two or more reforming rooms ~~(6)~~ connected in series, in which a gas mixture ~~(2)~~ comprising a fuel, water and air is supplied to one end thereof and a reformed gas ~~(4)~~ containing hydrogen is discharged from the other end thereof, wherein

a first catalyst ~~(8a)~~ that catalyzes a partial oxidation reaction in an oxygen environment is loaded into the upstream end of each of the reforming rooms, and a second catalyst ~~(8b)~~ for the reforming reaction is charged into the downstream portion thereof, and

the gas mixture is supplied directly to one end of each reforming room, and the reformed gas is discharged from the other end of the furthest downstream reforming room.

2. (Presently amended) The reforming method specified in Claim 1, wherein the same catalyst that can catalyze both the partial oxidation and reforming reactions is used as the first and second catalysts ~~(8a, 8b)~~.

3. (Presently amended) The reforming method specified in Claim 1, comprising a reforming tube ~~(10)~~ composed of two or more of the reforming rooms ~~(6)~~ connected in series, and a reformer housing ~~(12)~~ that encases the reforming tube, wherein

a high-temperature heating gas ~~(16)~~ is introduced into the space ~~(14)~~ formed between the reforming tubes and the reformer housing, and after the first catalyst ~~(8a)~~ and the second catalyst ~~(8b)~~ have been heated up from outside the reforming room, the gas mixture ~~(2)~~ is supplied to each reforming room to undergo reforming.

4. (Presently amended) The reforming method specified in Claim 34, wherein the high-temperature heating gas ~~(16)~~ is supplied directly to one end of each of the reforming rooms ~~(6)~~ and is discharged from the other end of the furthest downstream reforming rooms, and after the first and second catalyst ~~(8a, 8b)~~ are heated up from inside the reforming rooms, the gas mixture ~~(2)~~ is supplied to each reforming room to undergo reforming.

5. (Presently amended) A reforming apparatus comprising
a mixed gas feed tube ~~(18)~~ that supplies a gas mixture ~~(2)~~ composed of a fuel, water and air, and

a reforming tube ~~(10)~~ that converts the gas mixture into a reformed gas ~~(4)~~ containing hydrogen, wherein

the reforming tube comprises two or more reforming rooms ~~(6)~~ connected together in series, in which the gas mixture ~~(2)~~ is supplied to one end and the reformed gas ~~(4)~~ is discharged from the other end thereof,

each of the reforming rooms is filled with a first catalyst ~~(8a)~~ that catalyzes a partial oxidation reaction in an oxygen environment in the upstream portion thereof, and with a second catalyzer ~~(8b)~~ for reforming in the downstream portion, and

gas feed means ~~(20)~~ ~~is~~are provided on the mixed gas feed tube, that directly supplies the gas mixture to each reforming room.

6. (Presently amended) The reforming apparatus specified in Claim 5, wherein the gas feed means ~~(20)~~ comprises an outer cylinder ~~(24)~~ that covers one end of the

reforming tube-(10) and at least a part of the side surface thereof, and forms a gap-(22) around the reforming tube in the peripheral direction that works as a passage for the gas mixture,

inlet ports-(26) are disposed on the side surface of the reforming tube and supply the gas mixture to each reforming room from the gap, and

the inlet ports comprise flow control mechanisms-(28a, 28b) or flow regulate means-(32a, 32b) for adjusting the flow of the gas mixture supplied to each reforming room.

7. (Presently amended) The reforming apparatus specified in Claim 5, wherein the gas feed means-(20) comprises a hollow penetration tube-(34) for passing the gas mixture-(2) through the interior of at least one of the reforming rooms, from one end thereof in the downstream direction of the reforming tube-(10),

the penetration tube comprises inlet ports-(36a, 36b) to supply the gas mixture individually to each reforming room, and

the inlet ports comprise flow control mechanisms-(28a, 28b) or flow regulate means-(32a, 32b) for adjusting the flow of the gas mixture introduced into each reforming room.

8. (Presently amended) The reforming apparatus specified in Claim 5, comprising a reformer housing-(12) that encases the reforming tube-(10), and a first heating gas tube-(28a) for introducing a high-temperature heating gas-(16) into the space (14) formed between the reformer housing and the reforming tube, from the outside.

9. (Presently amended) The reforming apparatus specified in Claim 5, wherein a second heating gas tube-(38b) is connected to the mixed gas feed tube-(18), to introduce a high-temperature heating gas-(16) from the outside.

10. (Presently amended) In the reforming apparatus that converts a gas mixture (102) comprising a fuel gas, steam and air, into hydrogen,

a reforming apparatus comprising a heating unit-(104) for evaporating and heating the gas mixture, a distribution tube-(108) that distributes the heated gas mixture evenly to a plurality of branch ports-(106) disposed at one end thereof, a reforming unit-(114) filled with a reforming catalyst-(112) for catalyzing the gas mixture, a manifold-(116) comprising the distribution tube on the inside thereof, a CO removal unit-(124) filled with a CO removal catalyst-(122) used to remove CO from the gas-(118) reformed in the reforming unit, and a casing-(126) for housing the reforming unit, the manifold and the CO removal unit, wherein

the reforming unit comprises a reforming room-(132) composed of a reforming tube-(130) of which one end is connected to the branch port and from the other end of which the reformed gas is discharged, or configured by disposing two or more of the reforming tubes parallel to each other, and a feedback mechanism-(134) for passing the reformed gas around the outer periphery of the reforming tubes and sending the gas to the manifold.

11. (Presently amended) The reforming apparatus specified in Claim 10, wherein the CO removal unit-(124) is located opposite or parallel to the reforming unit-(114) and communicates with the manifold-(116).

12. (Presently amended) The reforming apparatus specified in Claim 10, wherein the feedback mechanism-(134) sends the reformed gas-(118) to the manifold through a reformed gas passage-(136) formed by the space between the reforming tubes-(130) located close to each other or between the reforming tubes and the casing-(126), in the axial direction of the reforming tubes.

13. (Presently amended) The reforming apparatus specified in Claim 10, wherein the reforming tubes-(13) can be freely removed and replaced.

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14. (Presently amended) The reforming apparatus specified in Claim 10, wherein a fuel trap unit-(138) is disposed between the manifold-(116) and the CO removal unit (124), to remove fuel gas from the reformed gas-(118).

15. (Presently amended) The reforming apparatus specified in Claim 10, wherein the manifold-(116) comprises a feed tube-(142) for feeding oxygen, air or steam to the reformed gas-(118) sent to the CO removal unit-(124).

16. (Presently amended) The reforming apparatus specified in Claim 15, wherein the CO removal unit-(124) comprises one section or two or more sections, and feed tubes (142a, 142b) are disposed on the upstream side of each section to supply oxygen, air or steam.


17. (NEW) A reforming method comprising the steps of:

(a) providing two or more reforming rooms connected in series in a reforming apparatus, in which a gas mixture comprising a fuel, water and air is supplied to one end thereof and a reformed gas containing hydrogen is discharged from the other end thereof, wherein

a first catalyst that catalyzes a partial oxidation reaction in an oxygen environment is loaded into an upstream end of each of the reforming rooms, and a second catalyst for the reforming reaction is charged into a downstream portion thereof;

(b) supplying the gas mixture directly to one end of each reforming room; and

(c) discharging the reformed gas from the other end of the furthest downstream reforming room, wherein the reforming apparatus comprises:

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- i. a mixed gas feed tube that supplies the gas mixture composed of a fuel, water and air;
 - ii. a reforming tube that converts the gas mixture into the reformed gas containing hydrogen, wherein the reforming tube comprises the two or more reforming rooms connected together in series, in which the gas mixture is supplied to one end and the reformed gas is discharged from the other end thereof, and each of the reforming rooms is filled with the first catalyst that catalyzes the partial oxidation reaction in the oxygen environment in the upstream portion thereof, and with the second catalyzer for reforming in the downstream portion; and
 - iii. gas feed means provided on the mixed gas feed tube, which directly supplies the gas mixture to each reforming room.
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